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TIScover—A Tourism Information System Based on Extranet and Intranet Technology

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Abstract

The tourism industry more and more intensifies the endeavors to take advantage of the World Wide Web. However, Web-based tourism information systems are required not to offer online brochures only, but rather to provide both, value and service. One system which has recognized this fact is TIScover. TIScover allows the tourist for convenient and powerful access to tourism information and products through the support of different information retrieval philosophies along with an online booking facility. In addition, TIScover employs an Extranet and an Intranet component allowing the decentralized maintenance and customization of the tourism database. With this, a high quality content in terms of comprehensiveness, accurateness and actuality can be achieved and the system can be easily adapted not only for different kinds of tourism information providers, but also for different regions and even different countries. This paper gives a brief overview of TIScover and describes its main functional components.

An Overview Of TIScover

The development of TIScover has been started in 1996 based on the experiences made with the pioneering system TIS@WEB (Burger 1997). The aim of TIScover is twofold (Pröll 1998ab): first, tourists should be *supplied with comprehensive*, *accurate and up-to-date tourism information* on countries, regions and villages and all destination facilities they offer like hotels, museums or other places worth seeing. Second, it aims to *attract the tourist to buy certain tourism products* either offline or even more important to allow the tourist to buy them *online*. Originally, TIScover was realized to market the facilities of a certain region of Austria, namely Tyrol, only. Meanwhile, four other Austrian regions, although partly different in their destination characteristics have joined TIScover (TIScover 1998). Currently, TIScover manages more than 70.000 Web pages covering among others 750 villages and 15.000 accommodations, originating from more than 2700 tourism information providers, ranging from hotels to local tourism offices. However, TIScover has the potential to be employed not only in Austria but rather in any other country too. This fact has already been proven more than once: First, since half a year, TIScover is also employed in Asia, presenting tourism information about Thailand (TIScoverasia 1998). Second, TIScover is used by the German company START Media Plus, a major player in the area of online reservation systems, to present tourism information about Germany (Deutschlandreise 1998).

Figure 1. Functional Components of TIScover

The Functional Components Of TIScover

The functionality provided by TIScover can roughly be categorized according to the different user groups which are distinguished by the system into three different components (cf. Figure 1). These components, the *public Internet* component, the *Extranet* and the *Intranet* are all located around the *central TIScover database* and are further described in the following.
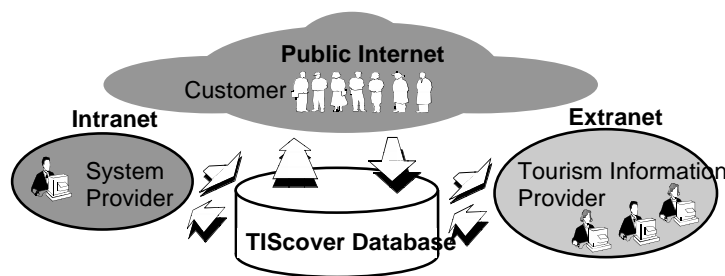
The TIScover Database

The core component of TIScover is constituted by a database system together with a *centralized*, *common database schema* for the consistent management of tourism information. With this, large amounts of tourism information can be *easily handled* in a *consistent way* on a *large distributed scale*. The

schema currently consists of about 300 database tables holding information about various kinds of destination facilities, such as accommodations, recreational and infrastructural facilities as well as information about bookings, authorizations and system configuration. To achieve performant access, Web-pages presenting the tourism information to the tourist are not generated on the fly, but are rather pre-generated every time the underlying information changes (Pröll 1998c).

The Public Internet

The public Internet component comprises those functionality of the system which is accessible by every tourist all over the world and can be further divided into four modules. The module *Reports* is used to provide actual and frequently changing tourism information like snow and avalanche conditions, water temperatures and weather forecasts. The module *Trailer* represents some kind of tourism magazine, featuring articles about highlights or special events in a certain region. The two main modules of TIScover called *Atlas* and *Scout* allow for powerful and convenient access to tourism information and products.

The philosophy behind the module Atlas is, that the customer is able to go through tourism information by following a geographical hierarchy ranging from world via continent, state and country to a village. Each of the geographical levels offers those tourism information and products which are important right at that level. For example, one gets information about duty free regulations as well as the highlights of a state at the state-level, whereas at the village level, information about skiing facilities is available. The kind of information as well as the content gets more into detail the deeper one navigates into the hierarchy. Accommodations, like hotels, are placed at the village level and represent the starting point for online booking.

The module *Scout* allows for a direct search of every kind of tourism information as well as online booking of tourism products (Pröll 1998a). For this, the Scout supports *two different approaches*. First, by means of the *database query approach* a search within *data, structured by the common database schema using boolean logic* is possible, whereby the search criteria are restricted to attributes of the schema. A major benefit is that independent of the geographical level where the search is started by the tourist, the system supplies only those bookable products which are in fact available for a required time interval. Second, the *classical information retrieval approach* allows for a search within *unstructured text involving uncertainty and ranking* and is comparable to the functionality of well-known Internet search engines. With this, all Web-pages are found containing an arbitrary keyword, e.g., all Web-pages containing the keyword "carving" starting at the level of Tyrol.

The Extranet

The effectiveness of a tourism information system heavily depends on the quality of its content in terms of its accurateness and actuality. The dynamic nature of some tourism information makes this a challenging task. To cope with this crucial requirement, TIScover follows a *decentralized maintenance approach* on the basis of an *Extranet* (Regli 1997). Each tourism information provider, no matter of being a small guest house or a large local tourism office, is able to actualize and extend his tourism information and products directly, 24 hours a day. This obviously leads to both, much less overhead for the system provider and higher quality of tourism information because of its actuality. It has also been turned out that this approach drastically reduces the logistical problem occurring in case that a new version of the Extranet application has been developed by the system provider. Furthermore, the scalability is high since, a new tourism information provider can be incorporated by simply establishing the proper authorization. All other issues including concurrency control and consistency management come for free because of the underlying database system. Besides the pure actualization of existing tourism information, the Extranet allows the tourism information provider to *customize complexity* as well as *representation of tourism information* for his peculiarities.

Concerning the complexity, at the lowest level, the tourism information provider presents pure information about destination facilities only. At the next level, a destination facility can be made bookable by the tourism information provider, in that two attributes namely the *price of the product* and the so called *allotment*, representing the number of times a product can be booked are added. Furtheron, for every bookable tourism product, certain conditions can be defined concerning, e.g., restrictions for the weekday of arrival and price reductions. Finally, the combination of several products of different types into a so called *package,* having an individual price is also possible.

Since especially in the tourism industry, *uniqueness* is the main attraction tourism information providers want to differ from each other in the representation of their information. TIScover copes with this mainly by using a concept of so called *layout templates* defining the arrangement of text and images on a certain page (Pröll 1998c). The tourism information provider in turn is able to choose between the different layout templates for each kind of information and product which should be presented and is free to use, e.g., a picture, an animated GIF or even to employ virtual reality.

The Intranet

The functionality of the Intranet component of TIScover is accessible by the system provider only. With this, the whole system including the public Internet, the Extranet and the Intranet itself can be customized in various ways. First, layout templates can be constructed for the Extranet by means of a Web-based *Layout Assistant*. Second, different authorization roles for the Extranet and the Intranet as well as the actual users of the system can be managed. Third, since TIScover acts in an international context, *multilinguality* and *multi-currency* is supported and can be customized within the Intranet for all functional components of TIScover (Pröll 1998c). Multilinguality is achieved, by simply translating all tourism information as well as all

predefined headers and items for Intranet, Extranet and Public Internet and entering them using a Web-based *Translation Assistant*. The desired language can in turn not only be chosen from a potential customer for the public Internet side but also from the system provider for the Intranet and the Extranet side. Considering multi-currency support, the default currency representing the basis of all price calculations can be changed by the system provider according to the country where TIScover is employed. The tourist and the tourism information provider can in turn choose another currency.

Finally, a powerful mechanism of TIScover in order to take into account regional differences is that the system provider is able to customize the system at the *category level*. Examples for different types of such categories are *activities in town*, e.g., alpine skiing, fishing and curling or the *snow quality*, including perfect snow, icy and snowless. TIScover allows the system provider to change existing categories and its order just as new categories along with arbitrary icons can be added every time new requirements arise, e.g., because a new totally different region has to be incorporated. Overall, TIScover supports more than 60 different types of categories which can be customized. Out of the default categories which are made available by the system provider, the tourism information provider can make arbitrary selections within the Extranet to best describe the tourism products offered.

Concluding Remarks

So far, with TIScover, a system has been developed which fulfills not only the needs of tourists but also those of different tourism information providers of different regions and countries mainly because of the various possibilities of customizability as supported by the Extranet and Intranet component. Future work includes, among others, the incorporation of mechanisms for electronic counselling, customer profiling and long transactions to further improve the service quality of TIScover (Kappel 1996; Sheldon 1997).

References

Burger F., Kroiß P., Pröll B., Richtsfeld R., Sighart H., Starck H. "TIS@WEB - Database Supported Tourist Information on the Web," in *Proc. of the International Conference on Information and Communication Technologies in Tourism (ENTER'97)*, A Min Tjoa (ed.), Springer, Edinburgh, Scotland, 1997, pp. 180-189.

Deutschlandreise Homepage: http//www.deutschland reise.de, START Media Plus GmbH Frankfurt, Germany 1998.

Kappel G., Rausch-Schott S., Retschitzegger W., Sakkinen M. "A Transaction Model For Handling Composite Events," in *Proceedings of the Third International Workshop of the Moscow ACM SIGMOD Chapter on Advances in Databases and Information Systems (ADBIS'96)*, Moscow, Sept. 1996, pp. 116-125.

Pröll B., Kroiss P., Retschitzegger W., Wagner R. "Online Booking on the Net - Problems, Issues and Solutions," in *Proceedings of the International Conference on Information and Communication Technologies in Tourism (ENTER'98)*, D. Buhalis et al. (eds.), Springer, Istanbul, Turkey, 1998a, pp. 268-277.

Pröll B., Retschitzegger W., Wagner R. "TIScover - A Web-based Tourist Information System," in *Proceedings of the EURO-MED NET'98 Conference*, Nicosia, Cyprus, March 1998b.

Pröll B., Retschitzegger W., Wagner R, Ebner A, Beyond Traditional Tourism Information Systems - The Web-Based Approach TIScover, accepted for publication for the *Journal of Information Technology in Tourism (ITT)*, Vol 1, No 1, 1998c.

Regli W. "Intranets: Where the proverbial rubber meets the business road," *IEEE Internet Computing*, Vol. 1, No. 5, Sept/Oct. 1997.

Sheldon P.J. *Tourism Information Technology*, Cab International, Oxon/New York, 1997.

TIScover Homepage: *http://www.tiscover.com*, TIS Innsbruck, FAW Hagenberg, Austria, 1998.

TIScoverasia Homepage: *http://www.tiscoverasia.com*, Go Thailand Tours Ltd., Bangkok, Thailand, 1998.